reported as actually spending the winter with us. The present season, it should perhaps be added, has been exceptionally severe.—Bradford Torrey, *Melrose Highlands, Mass.*

Notes on the Occurrence of Uncommon Species at Beaver, Pa.—**Clangula hyemalis.** Long-tailed Duck.—On April 15, 1890, a party of three, all females, appeared at the mouth of the Big Beaver Creek, of which two were secured by one of the local gunners and given to me for inspection. The fact is certainly somewhat worthy of remark considering the lateness of the date and the mildness of the previous winter.

Phalaropus lobatus. Northern Phalarope.—On the 26th of September, 1890, while pursuing a wounded duck, a bird of this species flew past me and alighted not a dozen paces away, showing no more fear or suspicion than would a Least Sandpiper. My shotgun missed fire twice before I at last secured it, in a condition unfortunately quite unfit for preservation. The only note it uttered was the chirp, which, more or less modified, characterizes nearly all the Shore-birds.

Tringa bairdii. Baird's Sandpiper.—Shot a single individual of this species September 16, 1889, while in company with a couple of Semipalmated Plovers.

Geothlypis philadelphia. Mourning Warbler.—Two specimens have been taken thus far, one on May 11, 1889, the other on May 21, 1890, which dates, though in different years, probably represent the extremes of migration at this place.—W. E. Clyde Todd, *Beaver, Beaver County, Pa.*

Cistothorus marianæ, Buteo lineatus alleni, and Syrnium nebulosum alleni in South Carolina.—A very interesting collection of birds made by Mr. James E. Benedict, of the National Museum, on the coast of South Carolina (near Charleston), in January, 1881, contains several specimens of the first-named of the above mentioned species and one each of the other two—all perfectly typical. The *Cistothorus* is so exceedingly different from *C. palustris*, in both plumage and proportions, judging from these specimens alone, that I could not doubt their specific distinctness.—Robert Ridgway, *Washington, D. C.*

CORRESPONDENCE.

[*Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.*]

Camera Notes for Ornithologists.

To the Editors of The Auk:—

Dear Sirs: At the last Congress of the American Ornithologists' Union there were exhibited many photographs of all sorts of ornitholog-

ical subjects, and the majority of them were examined by the writer with great care. For one, I was disappointed in the results arrived at by the authors of the most of them; as there appeared to be such a total absence of any practical result attained. Among the best that I saw were some taken by Dr. Edgar A Mearns, but even those, the work of a most painstaking naturalist, did not come up to what the camera is capable of performing for practical ornithology. Little or nothing is to be gained in this latter direction by photographing bunches of game, or badly mounted specimens, and similar subjects. Any tyro can accomplish as much as that, and ornithology not be called upon to thank him for it.

In the present communication it is the writer's object to relate some personal experiences which may be of assistance to those interested in this line of work.

Now in the first place as to some of the objects to be attained: There are a number of these. We may desire, for example, a sharp, clear photograph, which either may be natural size or may present the subject reduced, for the use of the lithographer, in order to place in the latter's hands an *accurate* figure to be copied on to stone, and the plates printed therefrom to be used for illustrative purposes. The subject may be a bird, its young, or its nest, or a dissection of a bird, or its skeleton, or its eggs, and so on indefinitely. Owls present to many artists difficult subjects to draw satisfactorily, but there is no reason why we should not, by the aid of the camera and a 5 × 8 plate, for a small sum, and in very short order, have ready for the lithographer a life-size figure, and a perfectly accurate one, of such a species as *Nyctala acadica*, or upon a similar plate a handsomely reduced figure of *Bubo virginianus*. Again, by varying our material colored figures are easily obtained for like purposes. Photographs of this character may also be used to make *woodcuts* from, or they may be reproduced by some of the various styles of 'process work.' Yet another object:—We may desire to produce by the aid of a camera an accurate figure of any of the above-mentioned subjects from which an *electrotype* can be *directly* made. This also is now easy of accomplishment, and such illustrations meet a vast variety of needs in descriptive ornithology. These then are some of the principal objects to be attained, viz.:—*Clear, accurate figures*, either life-size or reduced to *any* desired size, and either plain or colored, which (by the use of different materials) can be used *at once*, by either the lithographer, the wood-engraver, the 'process worker,' or the electrotyper.

Your material must be of the *best* in all particulars. I use a large, first-class, quick-working lens; a Blair's camera for the 5 × 8 plate; the iron and oxalate developer, using the chemically pure material (filtered); bichloride of mercury and ammonia for intensifying, etc., etc.

Our method of procedure can best be illustrated by a few examples. Say we wish to reproduce, life-size, a Hawk's egg. Suspend on the wall opposite and under the strong sun light a smooth, half-inch, pine board. Cover this with *white* blotting-paper, held on with some half dozen artist's thumb-tacks. Of course your egg is to be blown, and not show

the opening. Next you decide whether or no you desire it to throw a shadow; if you do you simply fasten it to the blotting paper with a small piece of soft wax, exposing to the camera the side you wish represented. If you do not, you insert a piece of wire a few inches long into the board, and perpendicular to it, and fasten the egg to the end of it with a soft piece of wax. Place a bucket of water on the floor under the egg, in case the specimen should accidently drop off. Focus the egg natural size and *sharp* on the ground-glass of your camera; this may be ascertained by a pair of calipers, comparing the actual length of the egg with its image upon the ground-glass. Insert your smallest diaphragm, and expose,—the time of exposure being governed by your former experiences. I prefer Seed's dry plates. They give excellent results. After developing, unless you get a *very* strong negative, it is *always* best to intensify your plate, and this is done by the usual mercury and ammonia process. Now if you wish an uncolored figure, to be lithographed, or woodcut, or for some of the special processes, you must print on the best ready sensitized *albumen* paper, toning the print *handsomely* afterwards. On the other hand if you desire a *colored* figure you must print on plain, *i. e.*, *non*-albumenized, sensitized paper, and afterwards color the print by hand with Newton's water-colors *from the specimen*. Pure white eggs stand out well when photographed against black velvet or crape; this also applies to some skulls and other osteological specimens, when they are cleaned to a state of glistening whiteness. Such a procedure defines the outlines well for the engraver.

When we come to the photographing of birds, *living* birds, for the purpose of obtaining the *proper kind* of figures that can be used for the various methods of reproduction now in vogue, we enter upon a field where one can display no end of patience, tact and ingenuity. It will be a long day before the writer will forget his experience in obtaining a photograph of a live Screech Owl. Three times I walked half a mile from the house where I could get a *sky background* for him on the summit of a hill, where an old natural stump was also to be found to serve as a perch for him. Just as good a result can be obtained by photographing your bird in your studio with a *sheet* for a background, and then you may choose any kind of perch you desire, from a museum T, to the limb of a rugged old pine with the cones and spines on. Right here, however, I desire to mention a process, no doubt already known to many, for which there is no end of use. Say you have obtained a fine, *intensified* negative, the subject being a bird caught in the act of some habit peculiar to it. You wish to obtain a good, strong, *accurate* outline figure of it, from which an *electrotype* can at once be made, to serve as an illustration for some article upon which you may be engaged. Make a print from the plate upon plain, non-albuminized, sensitized paper. Remove the print to the dark-room and wash out the silver from it thoroughly. You may tone, but it is not absolutely necessary unless there is very considerable detail in your figure. Dry the print in the dark, and keep in a perfectly dark place until evening. When evening comes complete your work under a

good lamp where the direct rays do not fall upon your print. Pin this latter out on a small drawing-board with artists' thumb-tacks, and then with a mapping-pen (No. 291, Gillott's) and Higgins' American Drawing Ink, carefully ink over by lines and otherwise the outlines of your figure. In doing this you will have the opportunity of making it appear *just* as you desire your outline ink sketch to appear when it comes to be finally printed from the electrotype. Having carefully completed your work, immerse the print *flat* in a tray containing a saturated solution of bichloride of mercury. This in a moment takes out *all* of the print except the ink outline you have traced, and this latter it leaves upon a pure *white* sheet of paper. Next dry the print thoroughly, and mount upon a suitable card. At a small cost, a good electrotype can be made from this figure. Photographing against a sheet, of course, takes out a great deal that you do not want in your reproduced figure, but by the process just described you need not have a single point or line more than you want. It works admirably where we wish to *reduce* the subject to any required size; in osteological subjects and in dissections; in deformities of birds; and indeed in dozens upon dozens of other cases. To naturalists in general I would say that the process just described is absolutely invaluable; by its means ready and *accurate* sketches are made of characters of country; of all sorts of ethnological subjects, as pottery and native arts, sometimes so difficult to draw; of complicated skeletons; of living animals of all kinds, and thousands of other subjects too numerous for enumeration.

With some live birds the following plan will be found to work well: Suspend a shelf, at the proper height, from the wall of your studio, and in the *proper light*. This shelf, as usual, is to be entirely covered with white blotting paper, and upon its horizontal part is to be firmly fixed the limb, trunk, or rock, or turf upon which you desire your specimen to appear. Set up your camera and focus this perch sharply on your ground-glass; next put in your smallest diaphragm and attach your 'pneumatic shutter' ready for instant use. Gently take your living bird in your hand, smooth its feathers, caress it for a moment or two, then quietly place its head under its wing, and by beginning slowly soon rapidly whirl your specimen in a circle. This, as it were, 'puts it asleep,' but it will seize the perch with its feet, or rest quietly on rock or turf. Place it as near as possible in the position you desire, and stand ready for a semi-instantaneous picture. Be *perfectly* quiet. In a few moments your bird gradually comes to, rights himself, preens up a little, looks around, steadies himself into a natural attitude, finally looks himself, and then more or less animated. This is your chance, puff the snap on him!

Faithfully yours,

Takoma, D. C., Dec. 28, 1890. R. W. Shufeldt.